Building Successful Physical Therapist-Surgeon Relationships

WALTER L. JENKINS, PT, DHE, ATC, LAT
PROFESSOR
DEPARTMENT OF PHYSICAL THERAPY
SCHOOL OF HEALTH AND HUMAN SERVICES
NAZARETH COLLEGE

Disclosure

- No Disclosures

Course Objectives

- Discuss how to optimize surgeon-physical therapist relationships in order to improve patient care
- Evaluate and modify a rehabilitation program for a patient with an ACL reconstruction based on:
  - surgical approach
  - graft selection
  - other factors unique to each individual case
Successful PT-Surgeon Relationships

- Surgeons View
  - "Training under fire"
  - Mostly Clinical (residency) Education

Successful PT-Surgeon Relationships

- Surgeons View
  - Training/experience
  - Diagnostics
  - Case-based

Successful PT-Surgeon Relationships

- Surgeons View
  - Training/experience
  - Surgical skills
  - Case-based
Successful PT-Surgeon Relationships

- Surgeons View
  - Best outcomes for their patients
  - Many patients to manage
  - Controls the patient in the post-operative process
    - Comfort level with rehabilitation
    - Comfort level with physical therapy
    - Comfort level with physical therapist

Successful PT-Surgeon Relationships

- Surgeons View
  - Previous experiences with physical therapy
    - Personal Experience
    - Medical School
    - Residency
    - Fellowship
    - Clinical practice
    - Background in athletics

Successful PT-Surgeon Relationships

- Surgeons View
  - Post-Operative
    - Management
    - Basic Science
    - Surgery
    - Healing
    - Rehabilitation Science
    - Bone
    - Articular cartilage
    - Fibrous connective tissue

- Surgeons View
  - Administrative Support
    - Front office staff
    - Nursing staff
    - Radiology/Diagnostic Imaging
    - Relationships with other rehabilitation providers
Successful PT-Surgeon Relationships

- Physical Therapist View
  - Classroom/Laboratory
  - Clinical Education

- Physical Therapist's View
  - Best outcomes for our patients
  - Contact with patients
    - More than surgeon
  - Contact with surgeons
    - Develop relationship
      - Office visits
      - Operating Room
      - Event Coverage

Successful PT-Surgeon Relationships

- Key Information for the Physical Therapist
  - Basic Science - Healing Science
    - Bone
      - Connective Tissue
    - Fibrous Connective Tissue
    - Tendon vs. Ligament
    - Cartilage
    - Fibrous Membranes, Art. Cart
    - Flexion Devices
    - Joint
    - Plane and Siffs
    - Scissors
    - Plates and Rods
Successful PT-Surgeon Relationships

- **Key Information for the Physical Therapist**
  - Rehabilitation Science
  - Mechanical Stress
  - Therapeutic Exercise
    - Compression
    - Traction
    - Shear/Shearing
    - Speed of Loading

Successful PT-Surgeon Relationships

- **Optimal Mechanical Stress**
  - Compression
  - Shear
  - Articular Cartilage
  - Tension
    - Ligament
    - Tendon
  - Shear/torsion
    - All structures are weaker
  - Speed of Loading
    - All structures are stronger with faster loading

Successful PT-Surgeon Relationships

- **Physical Therapists View**
  - Read the MD literature
    - American Journal of Sports Medicine
    - Sports Health
    - Journal of Bone and Joint Surgery
    - Associated Journals
  - Physician Meetings
    - AOSM
    - Am Academy of Ortho Surgery
    - Specialty Meetings

- **Physical Therapists View**
  - Read the PT literature
    - JOSPT
    - LSPT
    - Sports Health
  - Professional Meetings
    - Team Concept Conference
    - CSW
    - NEXT
    - Workshops
Successful PT-Surgeon Relationships

- Roadmap for Success!
  - Respectfully take the initiative

Successful PT-Surgeon Relationships

- Roadmap for Success!
  - Be bold in a quiet way

Successful PT-Surgeon Relationships

- Roadmap for Success!
  - Physical Therapists - Competence and Confidence
Successful PT-Surgeon Relationships

- Roadmap for Success!
  - Know what you know!
  - Know what you don't know!
  - Be confident!

Successful PT-Surgeon Relationships

- Model Program Development
  - Research historical and current literature
  - Synthesize the literature
  - Develop an outline for program development
  - Discuss with each surgeon individually
  - Respectfully debate how to implement the program
  - Example - ACL Rehabilitation

ACL Rehabilitation

- MOI: Contact
  - Valgus with IR
  - Posterolateral blow
  - Anterior Force
  - Hyperextension
  - Combined injury

- MOI: Non-Contact
  - Valgus with ER
  - Deceleration
  - Internal Rotation
  - Hyperextension
  - Repetitive loading
ACL Rehabilitation

- **Conservative Mgmt. and Pre-operative care**
  - Significant improvement in knee function was noted following a 6 wk rehab program.
  - Initials that operative decisions should be in part based on rehabilitation.

- **Copers vs. Non-Copers**
  - Concomitant injuries (meniscus, LCL, etc.)
  - Activity level pre and post ACL injury
  - Ability to "manage the instability"

- **Wilk, et al. 1996**

ACL Rehabilitation

- **Closed vs. Open Kinetic Chain Exercise**
  - Outcome measures (LLR, PPSW)
  - A comparison of closed and open kinetic chain exercises.

- **Closed**
  - Rehabilitation:
    - 4 wk therapy
    - Interval therapy

- **Open**
  - Rehabilitation:
    - 4 wk therapy
    - Interval therapy

- **Surgical Intervention**
  - Bony-Pulitel Tendon Repair
  - Cartilage
  - Femoral/Giochis
  - Autograft vs. Allograft
  - One vs. Two Bandage Techniques
  - ARCO 2000
  - Bone Bank performed per year
ACL Rehabilitation

Surgical Intervention
Graft Placement
Central B/PF-B
Graft Fixation

ACL Rehabilitation

- Graft Fixation
  
- Hamstring graft

ACL Rehabilitation

- Graft Placement
  - 88% of revisions had a misplaced graft
    - 45% had moderate to severe pain
    - 25% had kneeling
    - 40% had "giving way"
    - 40% said their knee was "normal"

Successful PT-Surgeon Relationships

- Operative Reports - Difficult to obtain – Priceless!

ACL Rehabilitation

- Treatment and Rehabilitation
  - Patient Goals/Expectations
    - Recreational
    - Occupational

ACL Rehabilitation

- Acute Complications
  - Pain and effusion
  - Range of motion loss
  - Patellofemoral joint
  - Articular cartilage
  - Strength loss
ACL Rehabilitation

- Complications (one year post-op)
  - Range of motion
    - 0/90 vs 45/120
  - Quadriceps strength
    - 90% vs 50% (pre-injury levels)
  - Instability
    - KT-1000
    - ± 2.5 mm: safe inside ROM
  - Fear emotion
    - 25% vs 42%
  - Conclusion
    - Early weight bearing not necessary
    - Early complications


ACL Rehabilitation

How fast is too fast?

- ACL Graft Strength
  - ACL grafts in humans do not bear strength like those observed in animals

ACL Rehabilitation

- Obtain Full Extension

ACL Rehabilitation

- Restoration of Hyperextension
  - Group A: Average of 10° hyperextension
    - KT 2000 = 2.4 mm
  - Group B: Average of 18° hyperextension
    - KT 2000 = 2.5 mm

- Functional Progression – NATA News: 2-2015
  - 0-2 wks: Warm-up, Pornhub Therapy
    - 3 wks – walking
    - 6 wks – jogging
    - 8 wks – sprinting
  - Land Training
    - 10 wks – jog 10 x 100 yds
    - 14 wks – jog 14 x 100 yds
    - 14 wks – burpees back
    - 15 wks – change running
    - 15 wks – agility ladder

ACL B-PTB Autograft

- Healing: 4-6 wks/6 mo
- Functional Activity
  - 0-2 wks
  - 2-4 wks
  - 4-6 wks
  - 6-24 wks
- ROM
  - 0-2 wks
- Therapeutic Exercise
  - 0-2 wks
  - 2-12 wks
  - 12-24 wks
- NB2 to 90° w/ heel
- Walking program
- Functional progression
- Full extension/lachan
- Unloaded activities
  - Short duration (≤20-30 sec)
  - Strength Training
    - ORC 90° to 15°
ACL Rehabilitation

**Allograft**

- Healing:
  - 6-8 wks
  - 12-16 wks
- Functional Activity:
  - 0-2 wks
  - 2-4 wks
  - 4-6 wks
- ROM:
  - 0-2 wks
  - 3-6 wks
- Therapeutic Exercise:
  - 0-8 wks
  - 9-12 wks
  - 12-16 wks
- NMES to 1/2 wt (out)
- Wt Bear prog (ext)
- Wt bear prog/walking program
- Functional progression
- Full extension
- Increase knee flexion
- Unloaded activities
- CEC (endurance-strength)
- Strength train

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ACL Rehabilitation

**Ultimate Impairment Goals – Knee Symmetry**

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ACL Rehabilitation

**Return to Participation Following ACLR**

- RTP rates to pre-injury level of activity after ACLR are poor and the risk for graft injury or contralateral injury requiring an additional surgery is substantial.
- Resolving impairments while eliminating movement patterns associated with injury and allowing sufficient time for graft healing likely give the athlete the best chance to RTP without further injury.
- Additional research is needed to identify objective testing to improve clinical decision making.

ACL Rehabilitation

Functional Deficits
- Gait deviations persist in both knees following ACL reconstruction (6 mo./5 yr.)
- Jump-landing with less knee flexion at 4 mo. post-op
- Jump-landing testing vs. locomotions
- Modicrome mapping and outcomes relationship between measurements


Outcomes

Incidence of Subsequent ACL Injury
- Minimum: 5-year follow-up
  - Overall: 4.9% (95% CI 2.4-7.4)
- Females: 1.9% (95% CI 0.4-3.4)
- Males: 5.0% (95% CI 3.0-7.0)


Injury Characteristics
- Overall: 7.7% (95% CI 5.0-10.4)
- Females: 6.1% (95% CI 2.7-9.5)
- Males: 8.3% (95% CI 5.6-11.0)


ACI Rehabilitation

Outcomes

Incidence of 2nd ACL Injury
- Minimum: 4-year follow-up
- Risk of Subsequent Injury
  - Overall: 4.9% (95% CI 2.4-7.4)
- Females: 2.6% (95% CI 0.7-4.5)
- Males: 7.0% (95% CI 4.1-9.9)


Injury Characteristics
- Overall: 10.0% (95% CI 7.0-13.0)
- Females: 5.0% (95% CI 2.0-8.0)
- Males: 12.0% (95% CI 9.0-15.0)

ACL Rehabilitation

Outcomes

- Conclusions
  - Returning or not returning to pre-injury level after ACL reconstruction is complex and multi-factorial
    - Psychological states
    - Time is not the determining factor
    - Impairments
      - ROM
      - Strength
      - Neuromuscular integration
      - Functional progression
  

ACL Rehabilitation

Outcomes

- Conclusions
  - MOON Guidelines
    - CPM does not improve ultimate motion
    - Early weight bearing decreases patellofemoral pain
    - Post-operative bracing does not improve swelling, pain, ROM or safety
    - OKC quad activity can begin at 6 weeks post-op
  

Thank You!

"To improve is to change; to be perfect is to change often" Winston Churchill